

IN THE CLAIMS

Please amend the following claims:

1 (currently amended): A combustion system for use in a gas burning heater, the combustion system comprising:

a circularly-shaped burner tube having a plurality of gas exit holes on one side and a means for feeding a controlled amount of gas thereto, said burner tube having a set diameter;

a first conical frustum section having a pre-determined first pattern of orifice ports, the first conical frustum section having a basal end [having a diameter proximate the diameter of the burner tube] and a smaller diameter distal end, the basal end of the first conical frustum section being concentrically attached to the burner tube adjacent to [proximate] said plurality of gas exit holes at a position radially inward from said gas exit holes, said distal end of the first conical frustum section extending generally in the direction in which the gas would exit said gas exit holes; and

a second conical frustum section having a pre-determined second pattern of orifice ports, said second conical frustum section having a basal end and a larger diameter distal end, [said basal end of the second conical frustum section having a diameter proximate the diameter of the burner tube,] said basal end of the second conical frustum section concentrically attached to the burner tube adjacent to [proximate] said plurality of gas exit holes at a position radially outward from said gas exit holes, said distal end of the second conical frustum reaction extending generally in the direction in which the gas would exit said gas exit holes.

2 (currently amended): The combustion system of claim 1 wherein said gas exit holes are equally-spaced around said [gas] burner tube.

3 (original): The combustion system of claim 2 wherein said gas exit holes are of a predetermined diameter.

4 (original): The combustion system of claim 3 wherein said gas exit holes are orthogonally positioned to a plane defined by the circularly-shaped burner tube.

5 (previously amended): The combustion system of claim 1 wherein said predetermined first pattern of orifice ports are arranged in a spiral-shaped pattern.

6 (original): The combustion system of claim 5 wherein said predetermined second pattern of orifice ports are arranged in a spiral-shaped pattern.

7 (original): The combustion system of claim 6 wherein said pre-determined second pattern of orifice ports includes seven rows of orifice ports.

8 (original): The combustion system of Claim 7 wherein the last two rows of the predetermined second pattern of orifice ports proximate the distal end are larger in diameter than the first five rows closest to the basal end.

9 (original): The combustion system of claim 8 wherein said pre-determined first pattern of orifice ports includes seven rows of orifice ports.

10 (original): The combustion system of claim 9 wherein the last two rows of the predetermined second pattern of orifice ports proximate the distal end are larger in diameter than the diameter of the orifice ports positioned in the first five rows closest to the basal end.

11 (currently amended): The combustion system of claim 10 wherein the first row of orifice ports closest to the basal end on said first and second frusta conical sections are equal in number to and aligned with said plurality of gas exit holes.

12 - 18 (withdrawn):

19 (currently amended): The combustion system of claim 1 wherein said means for feeding a controlled amount of gas to said gas exit holes is variable thereby allowing for the adjustment of [adjusting] the heat output of the combustion system.

20 (currently amended): A combustion system for use in a gas burning heater, the combustion system defining a combustion chamber within the gas burning heater, the combustion system comprising:

a circularly-shaped burner tube having a plurality of gas exit holes on one side, said burner tube having a diameter determined by the desired output of the gas burning heater;

a means for delivering gas to said burner tube;

a first conical frustum section having a pre-determined first pattern of orifice ports, the first conical frustum section having a basal end having a diameter about equal to [proximate] the diameter of the burner tube, the basal end of the first conical frustum section being concentrically attached to the burner tube adjacent to [proximate] said plurality of gas exit holes at a position radially inward from said gas exit holes, the first conical frustum section having a converging profile as the axial distance away from the burner tube increases in the general direction in which the gas would exit said gas exit holes; and

a second conical frustum section having a pre-determined second pattern of orifice ports, said second conical frustum section having a basal end having a diameter [proximate] about equal to the diameter of the burner tube, said basal end of the second conical frustum section being concentrically attached to the burner tube adjacent to [proximate] said plurality of gas exit holes at a position radially outward from said gas exit holes, the second conical frustum section having a diverging profile as the axial distance away from the burner tube increases in the general direction in which the gas would exit said gas exit hole; said first and second conical frusta sections communicating with the burner tube for mixing the appropriate amount of air to the volume of gas exiting said gas exit holes for defining a combustion chamber within the gas heater when [and] burning said gas.

21 (previously added): The combustion system of claim 20 wherein said pre-determined first pattern of orifice ports on said first conical frustum section includes a plurality of evenly-spaced rows of orifice ports.

22 (previously added): The combustion system of Claim 21 wherein at least the last row of the plurality of evenly-spaced rows of orifice ports proximate the distal end are larger in diameter than the first row closest to the basal end.

23 (previously added): The combustion system of claim 22 wherein said pre-determined second pattern of orifice ports on said second conical frustum section includes a plurality of evenly-spaced rows of orifice ports.

24 (previously added): The combustion system of Claim 23 wherein at least the last row of the pre-determined second pattern of evenly-spaced rows of orifice ports proximate the distal end are larger in diameter than the first row closest to the basal end.

25 (previously added): The combustion system of claim 20 wherein said means for feeding a controlled amount of gas to said burner tube may be variably controlled.

26 (previously added): The combustion system of claim 25 further comprising a flame sensor that communicates with the exiting gas and provides flame rectification of the burning gas and works in combination with the means for feeding gas to improve combustion.

27 (new): The combustion system of claim 1 wherein said predetermined first pattern of orifice ports include ports of more than one diameter and said pre-determined second pattern of orifice ports includes ports of more than one size.

28 (new): The combustion system of claim 20 wherein said predetermined first pattern of orifice ports include ports of more than one diameter and said pre-determined second pattern of orifice ports includes ports of more than one diameter.